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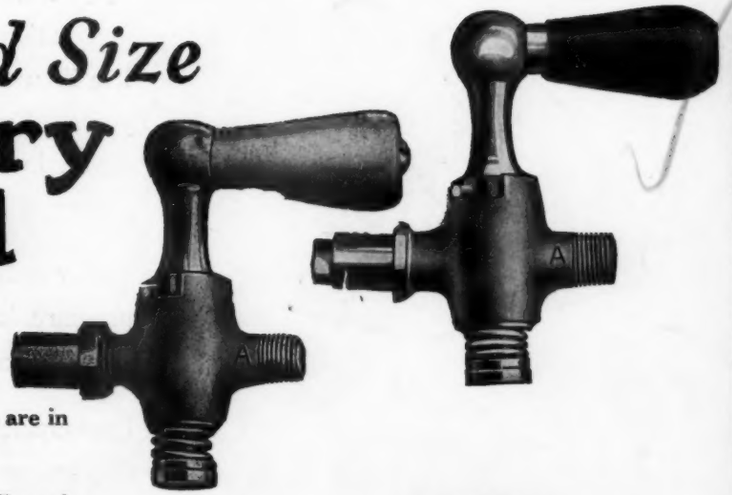

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Acme
GAS COCKS

Acme Brass Works, 8211 Collins Avenue & Belt Line R. R., *Detroit, Mich.*

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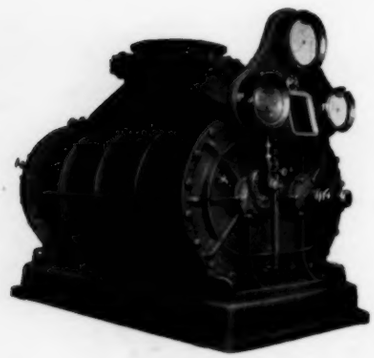
ROOTS

Accuracy, Reliability and Low Cost Combined in One Meter



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Write for Catalog 111 *and state your requirements so that we can show you just how little it costs for perfect station meter service.*

ROOTS

Rotary Foul Gas Exhausters

—

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—

Rotary Gas Boosters

—

Rotary Pumps for Wash Oils, Tar and Gas Oil

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Positive Displacement Gas Meters

—

Rotary Blowers and Gas Pumps for Industrial Gas Service

The P. H. & F. M. ROOTS CO.

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Peoples Gas Building

CONNERSVILLE, INDIANA

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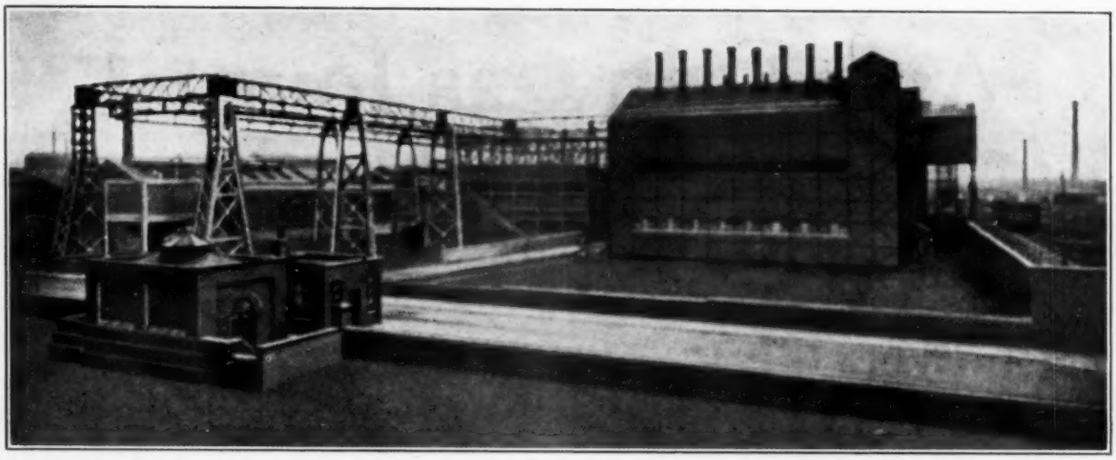

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Waste-Heat Boilers...
Coal Plant..... Each of the two retort benches is provided with duplicate coal breakers, wagon tippers and a line of pivoted-bucket conveyor with an electric lift and side-tipping wagons as a standby.
Coke Plant..... Coke is handled on a system of telpherage to screens and storage hoppers.
Foundations ..... Reinforced concrete raft.
Reinforced Concrete.. Two batteries of storage hoppers each with receiving hoppers for six screens; trestles and supports for the telpher track.
This Installation..... Is arranged to run in parallel with another system of vertical retorts, two installations of horizontal retorts and the water-gas plant, all of approximately the same capacity, and each provided with separate auxiliary plant and meter so that comparative results can be obtained.

particulars and estimates from

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of America, Inc.
150 Nassau St. New York

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Vertical Retorts

American Gas Journal

SIXTY-FIFTH YEAR

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AMERICAN
GAS JOURNAL

Vol. 120. No. 16 NEW YORK, APRIL 19, 1924 Whole No. 3458

How a Home Economics Department Is Run

The plan adopted by the New Haven Gas Light Co.

Philmer Eves

Advertising Manager, New Haven Gas Light Co.

THE illustrations accompanying this brief account of the Home Service Department, or, as it has always been named, Home Economics Department, of the New Haven Gas Light Company, indicate that the department is not a new experiment, but is thoroughly organized and established on a full time working schedule. It is one of the busiest of the company's undertakings and is unquestionably one which brings desirable returns in public good will and friendliness, as well as a considerable increase in output of gas and sale of appliances.

The entire second floor over the company's salesroom is devoted to this domestic department. The assembly hall itself is furnished with platform, white enameled gas range with oven heat regulator, white cabinet and work table. Close by are the dainty cupboards for the utensils. There is also a white enameled sink which is used at the demonstrations. This has hot and cold water supply adjacent to the platform. More than two hundred chairs are so placed that everyone present may, at as close a distance as possible, see the actual work being done by the demonstrator.

The free cooking meetings have been carried on for a number of years throughout the year except in the summer holiday months. They are conducted by a thoroughly competent and expert instructor who has two assistants who take turns in being on the platform.

The attendance has gradually grown from an average of sixty-eight in 1918 to one hundred and forty-eight last year. The record attendance of three hundred and seventy-eight and several of over two hundred women indicates the popularity of the lessons.

Visits to the Homes of Customers

The two assistants connected with the department, both graduates of domestic science colleges, are engaged during most of their time in visiting the homes to see that the gas cooking appliances are properly adjusted and in satisfactory working order. The latest information and instruction is given in the most economical and hygienic use of the gas range ovens. This work is appreciated by housewives and employers of cooks. Last year thirteen thousand three hundred and ninety-seven of these home calls and instructions were given, bringing lasting gratitude to the company and an augmented and proper use of gas ranges throughout the city. The New Haven company has kept a careful account of the cost of this home instruction, which it has found averaged in the last seven years 31 cents per consumer thus assisted. Last year, however, owing to concentration by house to house calls, this cost was lowered to 27½ cents per case attended to.

The assembly hall is not used exclusively for the demonstrations. For a number of years various public organizations, church and social societies, architects and other clubs, engineer associations and others have been allowed the free use of the hall and its entire equipment.

The Model Kitchen

The model kitchen has been maintained from the beginning, but has recently been entirely remodeled and furnished with an all steel, all white, thoroughly modern equipment. The beauty and utility of this now famous kitchen is greatly admired and is but partially seen from the illustrations. The kitchen and assembly hall, with its large seating capacity, the electric current generated by the power of the company's gas engines for the lantern lectures and moving pictures, are a recognized service offered free of charge by the gas company to the people of New Haven. Gratitude for the service is expressed in many letters, votes of thanks, public references and

press notices. Seven hundred and one press notices were clipped by the company from the local newspapers last year.

A Well Equipped Library Is Provided

A large oak cabinet twelve feet long, equipped with literature on gas appliances for lighting, cooking, heating and industrial appliances, is kept constantly supplied with the latest booklets, folders and circulars and other printed matter for distribution at the meetings and for mailing to prospective customers, architects and home builders.

The company's library of cook books in the assembly hall directly facing the arched opening now has one hundred and forty volumes, by the most competent authorities. Some of these are in different languages, French, German, Yiddish, Italian and

Greek. A delegate from Japan at the last convention of the American Gas Association in Atlantic City offered to send the company a complimentary cook book in Japanese. There are also books on cooking and other household subjects for girls.

The worthy object is to give the highest class of gas service to the patrons of the company. The department co-operates with the public school domestic science classes by giving talks and instructions to the pupils on the proper adjustment of gas burners, the economical way to use the gas range ovens and by special cooking and baking demonstrations for the teachers and pupils. In the summer and autumn seasons the department assists housewives and cooks to conserve fruits and vegetables for winter use by canning, preserving, dehydrating, etc.

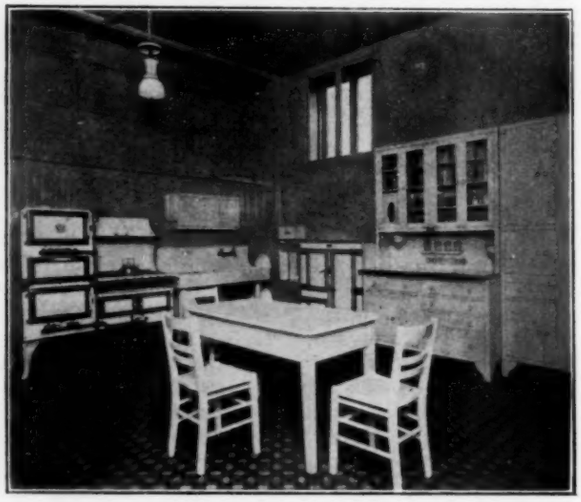
Work Is Appreciated by Executives of Company

The testimony of the secretary-treasurer of the company, Mr. J. Arnold Norcross, shows the high value the company attaches to this part of the gas service to its customers. He writes: "We believe emphatically in our Home Economics Department as conducted by our advertising manager, Philmer Eves.

"We believe that this work must be done if pleasant relations are to be maintained with customers in the homes. Many of them have continual but needless sources of dissatisfaction in the use of gas until they have received instruction and help from this department. Systematic house to house visits for inspection and adjustment of appliances, and instruction in use, seem to be the most valuable service rendered by this department.

"Public lectures and cooking demonstrations in our assembly room are more spectacular and impressive and have high advertising value, but for real solid and complete benefits to customer and company we depend on the individual house to house work by the Domestic Science Department. While we believe that the public demonstrations are the best advertising we have from every point of view, it is also the cheapest in point of expense. The return for this in good will and popularity is just as quick as for house instruction, but the return in added gas sales is less direct and harder to appraise.

"Another line of activity conducted by the department is the loaning of the assembly hall to organizations of all sorts for meetings, suppers, fairs, etc. We co-operate in every way possible to lighten



the work of preparation and insure success to these occasions. This costs us almost nothing, but is a great builder of good will."

This progressive company's Home Economics Department is under the direction of Philmer Eves, who previously organized and conducted similar activities in Paterson, N. J., and Indianapolis, Ind. He has developed this work to an exceptionally high plane of efficiency and success. The success and the prominence given to home service at the gas convention last October, when Mr. Eves presented a full account of the character and influence of the work has been brought to the attention of the gas industry throughout the country, resulting in a decision by many

(Continued on page 368)

"This Matter of Public Relations"*

Attacking this problem "From the Bottom"—The "Bill Jones Idea"

G. I. Vincent

Syracuse Lighting Company

THE business of a public utility is three-fold.
First, to render efficient service.
Second, to keep and increase the business.
Third, to secure the genuine good will of the customers.

For the first, the industry can point with real pride to the progress made. And for the second also, we must take off our hats to the work of the commercial departments. But for the third, it would not seem that any material progress has been made, and right here let us make a statement admittedly open to challenge.

I venture the statement that if an intelligent person made a thorough study of all the activities of the average well managed public utility and were then asked the question if it would be possible for the utility to secure the friendship of a substantial majority of its customers, he would answer in all good faith that he did not know, because it had never been tried.

I am not offering this as a complete statement of fact, but the evidence would support it, and if it is indeed true it would seem to be one of the unfortunate things that have occurred in the past history of our business. I would point out to you that if the third of my divisions of the utility's business were completely accomplished, the second would follow as a matter of course with very little effort, indeed. And even the first would be most favorably affected because is it not obvious that employees so operating as to secure and enjoy the friendly regard of all the customers must necessarily be intimately co-operating and be on the best terms with all the other employees? This in itself makes for more efficient operations and makes it far easier to establish improved technique.

I wish it could be understood that I do not at this time stand back of the challenge I have made, but I will give you the evidence as an attorney might who was faithfully trying a case in law.

History of Public Relations

Let us first examine the history of this matter of public relations. We can divide it roughly into three periods.

First, the period of indifference and concealment.
Second, the period of awakening.
Third, the modern period of real, if ineffectual, effort.

The first period is well within the memory of many of us here. It was not as bad as painted. The concealment was an earnest move for protective purposes, although it would seem, looking back, that it should have been clear that concealment almost always engenders suspicion. And keep in mind that few if any competitive industries of the period were thinking of complete publicity as an element of good will. As for indifference, not all the utility men were indifferent. Here and there there was a voice crying in the wilderness, but indifference limited his audience.

The Period of Awakening

The period of awakening was brought about in two ways, I think. In the first place, numerous rate cases showed the futility of concealment because when experienced managers found that their evidence became a matter of record and was to the last degree reasonable and honest, they were suffering from the very fact that the evidence had not theretofore been given publicity. Moreover, there was a keener perception of the fact that inasmuch as a utility served substantially every voter, it made all too fallow soil for the devious talents of the demagogue. Something was needed to meet it.

In the last and present period we are observing earnest efforts to secure the friendship of the customers, and in my own mind I have always divided this effort in two—first, working from the top down, and second—from the bottom up.

Good Will Through Advertising

By "from the top down" I mean the effort to secure good will through advertising and the work of managers and department heads through civic societies, participation in civic activities, and all similar efforts. Without discounting this effort for a moment or without suggesting even by implication that it would not be continued and increased, I make the assertion that in the very nature of the problem it can not at any time become productive of the

(Continued on page 375)

*Delivered at the Eastern States Gas Conference session, held April 9-10, 1924, Philadelphia, Pa.

The Matter of Profit and Loss

A few homely facts that bear repetition

J. B. Dillon

Every dealer, no matter which line of merchandise he handles, is interested in the profit and loss column.

Some people are not willing to admit that "Competition is the life of trade," yet if we had no competition we would grow listless and careless, and I honestly believe that, after all is said and done, competition does put into trade a large amount of activity, or at least it should. I know that it is one of the main incentives to make the hustler do a great deal more hustling.

Whatever you may think about the adage, competition is most everywhere, and unless you are willing to put up a fight it will sooner or later overwhelm you. To overcome it you must have profit.

Profit

Well, how are we going to get it?

Here is the way a retailer stated to the writer that he proposed to get his share, and as much of the business that he honestly could obtain.

Discount all bills. Sell at a reasonable price. Keep my store scrupulously clean. Follow the market up and down. Trim my windows regularly in a neat and attractive manner. Handle only quality goods, inculcate courtesy and cleanliness among all my sales people, and advertise.

You will observe that among this dealer's resolutions are points that have been mentioned many times, and no one—I believe—will deny that adherence to such a business policy will help the profit side of the ledger every day throughout the year.

Loss

None of us like to think of losing what we cherish. The word loss oftentimes brings consternation, the actual loss disconcerting us in such a manner that we find it difficult to regain our poise; therefore, many give up in despair; but that is wrong. Fight back, if the loss is at all recoverable, but, better still, overcome that which will bring about the loss.

"Oh, yes, that's good enough to tell, but how are we going to do it?"

The best answer to that question is to show some of the principle causes that brought about a loss of customers, and in some cases caused a suspension of the business.

Impatience, over-insistence, lack of tact, discourtesy and tricky methods while endeavoring to make the sale. Bad quality, misrepresentation and slow delivery after the sale.

No sales are often the result of ignorance of what you are trying to sell, the result being that you cannot be enthused, and neither is the customer. The sale goes to your competitor.

Unless your store is neat and tidy you can hardly expect people to come in.

Think It Over

Believing that all are agreed that the retailer's resolutions are O. K., let us dwell upon the causes given for losing trade, and then we will be forced to admit that none are of such a nature that they cannot be avoided. Just put yourself in the customer's place and then act as you would wish to be treated and you cannot lose with good goods.

The Aftermath

When we mention the loss of trade we do not refer to the "present sale." You may make that one if the customer has no spunk, but what about the future sales, such as repeat orders—those are the things that make a successful business—and what about the advertising of the satisfied customer and the "knock" of a dissatisfied one?

There is an old saying which runneth like this: "A ten-cent customer today may be a ten-dollar customer tomorrow," hence it is that we should never deviate from fair treatment to all and make every sale, regardless of the amount, as though our business life was dependent upon it. And then when you check up the profit and loss column you will find the balance is on the profit side.

U. S. GOVERNMENT ADVICE ON HOW TO FIND GAS LEAKS

Small leaks in gas appliances and tubing are a source of danger from possible explosions and fires, and should accordingly be guarded against, says the United States Bureau of Mines in a bulletin just published. Also the cost to the consumer of such small leaks is larger than is usually realized.

"A leak wastes gas every minute of the day, and a leakage of one cubic foot per hour means 8,760 cubic feet a year. Most gas meters have a small dial indicating one-half, one or two cubic feet of gas per revolution of the hand, and one of the uses of such dials is to detect leakage," says the bulletin.

"From time to time consumers should shut off all appliances and note whether the hand on this dial moves during a period of two or three hours. Meters do not move unless gas is passing through them, hence if the hand continues to move it is conclusive evidence that gas is leaking somewhere on the premises. Gas leaks may be found by brushing the pipe and appliances with soapy water, as escaping gas will form bubbles.

"Fire should never be used in searching for leaks, as this is dangerous. Leaks may be stopped temporarily if they are covered with soap and the pipe wrapped with tape or a cloth bandage, but a pipe fitter should be called immediately to make repairs."

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 16

Calculation of heat conduction

Use of Formula

How many B. T. U. will be conducted in a hour's time through the firebrick lining of a furnace in which the internal temperature is 1,200 degrees F. and the external temperature 75 degrees F., when the thickness of the lining is six inches.

From the aforementioned tabulation the constant K is 0.812, the area of the lining is 500 square feet.

The values of the different symbols in the above formula are therefore as follows:

$A = 500$ square feet.
$t_1 = 1{,}200$ degrees F.
$d = 6$ inches.
$K = 0.812$.
$t_2 = 75$ degrees F.

Then $Q = 0.812 \dfrac{(1200-75)\times 500}{6}$, which gives a result of 7610 B. T. U. per hour, the heat conducted through the lining of the furnace.

Heat Conduction Through a Composite Wall

Suppose the problem is concerned with the determination of the heat loss through a wall which is made up of different parts, as, for example, the wall of a refrigerator. The wall on the inside may be lined with tin, then may come a layer of wood, then a layer of insulating material such as felt or simply an air space filled with sawdust. The outside wall of the refrigerator may then be constituted of wood. The problem arises as to what amount of heat is transmitted through this kind of a composite wall. It is necessary to know the various thicknesses of the different layers that make up the wall, as well as the thermal conductivity coefficient K for the various materials that are employed in the construction of the same. Thus for the latter we have as follows:

K for tin 443
K for wood 0.5
K for sawdust 0.44
K for felt 0.252

The thicknesses of the various layers may be assumed to be as follows:

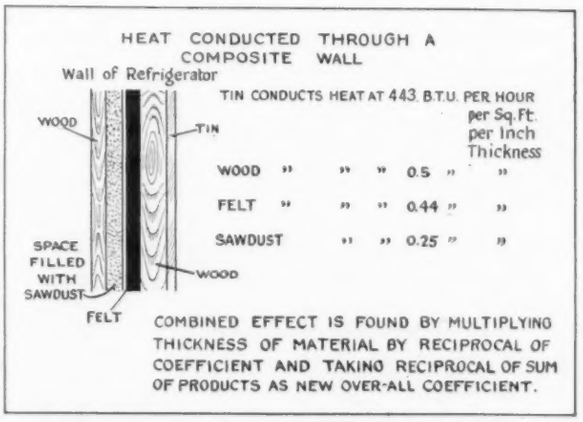
For tin .....One-tenth of an inch
For wood ....Total thickness of five inches
For sawdust layer .....Two inches
For felt .....One inch

This will make a total thickness of the wall of 8.1 inches.

The first step in the calculation is to determine the combined factor or thermal coefficient of the composite wall. The formula for this is as follows:

$$Kc = \frac{1}{\frac{1}{k_1}\times d_1 + \frac{1}{k_2}\times d_2 + \frac{1}{k_3}\times d_3 + \frac{1}{k_4}\times d_4}$$

In this formula Kc is the combined coefficient, k_1 is the coefficient for tin, 443, d_1 is the thickness of the tin or 0.1 inch, k_2 is the coefficient for wood, 0.5, d_2 the thickness of the wood, or 5 inches, k_3 the coefficient for sawdust, 0.44, d_3 the thickness of the sawdust, 2.0 inches, k_4, the coefficient for felt, 0.252, and d_4 the thickness of the felt, one inch.


HEAT CONDUCTED THROUGH A COMPOSITE WALL
Wall of Refrigerator
TIN CONDUCTS HEAT AT 443 B.T.U. PER HOUR per Sq. Ft. per Inch Thickness
WOOD
TIN
WOOD " " " 0.5 " "
FELT " " " 0.44 " "
SAWDUST " " " 0.25 " "
SPACE FILLED WITH SAWDUST
WOOD
FELT
COMBINED EFFECT IS FOUND BY MULTIPLYING THICKNESS OF MATERIAL BY RECIPROCAL OF COEFFICIENT AND TAKING RECIPROCAL OF SUM OF PRODUCTS AS NEW OVER-ALL COEFFICIENT.

The formula will then read as follows, and after the indicated calculations have been carried out the value of Kc is found to be as below:

$$Kc = \frac{1}{\frac{1}{443}\times 0.1 + \frac{1}{0.5}\times 5 + \frac{1}{0.44}\times 2 + \frac{1}{0.252}\times 1} = 0.071 \text{ approximately}$$

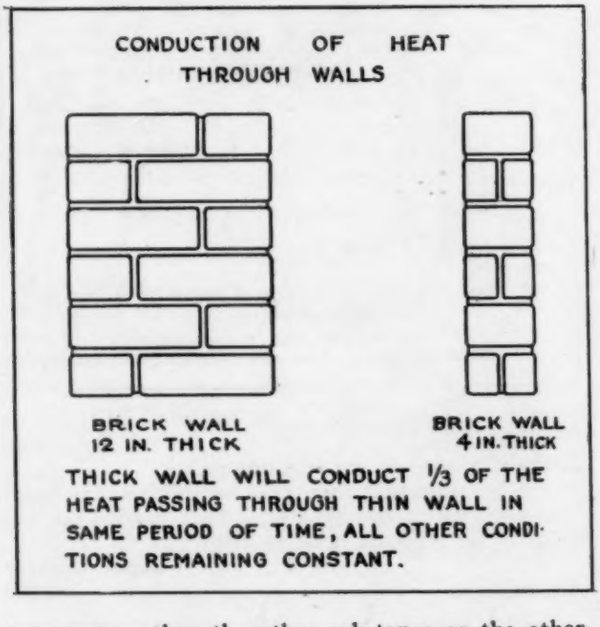
After the value of Kc is obtained the rest of the calculation is very simple. It is of course necessary to know the difference between the internal and external temperatures in the refrigerator and the surface area of the refrigerator walls. Kc is multiplied by the temperature difference and the surface area. The result will be the number of B. T. U. that are

transmitted through the wall by conduction in the period of one hour.

The same general method is used in calculating the heat conducted through walls, made of different materials, in all sorts of industrial and technical apparatus. In general some correction is made to take care of the junction between water surface and the surface of the wall, as, for example, in the case of the ordinary steam boiler or hot wall heater tank, the general practice being to express the effect of that junction in terms of so many inches of water. In each case it is first necessary to find the combined coefficient of heat conduction, and once that is found the rest of the calculation is carried out as has been described above.

SUMMARY

Before leaving this important subject it must again be emphasized that the conduction of heat through a solid, liquid or gas is that movement of heat which can only take place when the substances concerned are in direct contact with each other or where the individual parts of these substances are in direct contact. This is one of the essential requirements of heat conduction. Then, again, it must be remembered that heat will be conducted as long as one part of the substance or one substance is at a higher


CONDUCTION OF HEAT THROUGH WALLS
BRICK WALL 12 IN. THICK
BRICK WALL 4 IN. THICK
THICK WALL WILL CONDUCT 1/3 OF THE HEAT PASSING THROUGH THIN WALL IN SAME PERIOD OF TIME, ALL OTHER CONDITIONS REMAINING CONSTANT.

temperature than the other substance or the other part of the substance. As soon as the temperature is the same throughout, no more heat will be conducted.

It is therefore evident that the heat transmitted by conduction will depend on the temperature difference, the greater the latter the greater the amount of heat transmitted, the less the latter the lesser the amount of heat conducted. It will depend on the area of the substance just like the volume of water that flows through a water pipe depends on the size of the pipe. In other words, it is clear that twice as much heat will be conducted through a surface area of two square feet as through an area of one square foot. Finally the amount of heat that will be transmitted is less, the greater the thickness of the substance. Thus a substance that is five inches thick will, under constant conditions of temperature difference, surface area, etc., conduct half as much heat as when the thickness is only 2.5 inches. This is analagous to the case of the flow of water in a pipe. The flow in a ten-foot pipe will be less under given condition of size of pipe and pressure than in one five feet long.

The Element of Time

The element of time also enters into the determination of the conduction of heat and it is usually assumed that what is required is the amount of heat that will be conducted in a period of sixty minutes. Of course, it is easy to find the heat conduction in thirty minutes by halving the result for sixty minptes, for ten minutes by taking one-sixth of the value and so on.

By using the table which has been explained above and bearing in mind the few principles just described, the gas engineer can calculate the heat transmission through any substance or combination of materials that go to make up the walls or casing of industrial apparatus wherein heat is used to produce certain effects, either chemical or physical, in raw products which are being manufactured into finished products. However, in actual practice it is customary to use data that have been obtained by experiments and tests and observations on industrial appliances and devices in calculating the heat conduction that may be expected in others of similar character. The use of such tables will be described when considering each application of heat.

HOW A HOME ECONOMICS DEPARTMENT IS RUN

(Continued from page 364)

companies to inaugurate this service in their respective territories.

The managing section of the Commercial Department gave entire support to the movement. At the suggestion of Mr. Eves, a new committee was formed, with Miss Ada B. Swann, Public Service Gas Company, Newark, N. J., as chairman. This large committee, comprising experts in domestic science from many cities, met by invitation in New Haven on December 13 last, when the experts of the New Haven Gas Light Company's Home Economics Department served a delightful luncheon. The committee personally saw the Home Economics Department in practical operation and witnessed many evidences of its immense popularity with the people of New Haven.

As The Journal Views It

THREE-PART RATE IN NEW YORK STATE

In another part of this issue there is published a bill which was recently introduced into the Senate of the State of New York at Albany. This bill is of very vital interest to the gas companies and gas men in the State of New York. It is also of considerable interest to the entire gas industry of the country, for it is the first time that a New York State Legislature is asked to consider a bill calling for the establishment of the three-part rate in the State of New York.

That this act is pregnant with great possibilities should be evident to all. This great Empire State is hereby given an opportunity to be added to the list of commonwealths that have adopted the three-part rate in determining the charges that are placed upon gas customers to compensate gas companies for service rendered. Its adoption by New York will mark a distinct step forward in the battle for economic supremacy of gas as a universal fuel.

The three-part rate is too well known to gas men to require explanation here. Its operation in those communities in which it has been used has been fraught with considerable success. It is not believed that it was ever advanced as a cure-all for all sorts of conditions and situations. It is possible that in certain localities the application of the three-part rate would not be justified, at any rate, not in the form in which it has been conceived, but the principle of determining rate structure on this basis may be made to conform to local conditions. When this is done, its practical application is assured.

The essential characteristic, the particular and peculiar advantage that the three-part rate, or any other rate based on the identical principle, has, both for the gas customer and the gas company, is that it equalizes the burden that must be borne by the consumers and enables the gas company to go after large industrial business, to enlarge its plant in safety, to reduce operating costs through increased efficiency resulting from greater production, and in general to benefit thereby, not only itself, but all its customers as well. The three-part rate enables the gas company to charge for gas on an equitable basis, so that the customer who uses but a few hundred cubic feet a month, and who under the present rate structure is an unprofitable customer, is made to bear his proper share of the burden and to pay for the service that he receives.

Wherever this rate structure has been applied it has been found that the domestic consumer, who is a profitable customer at the present time and who has to compensate for the large percentage of unprofitable customers that every gas customer has on its books, benefits greatly. It is usually these very customers who are generally in poorer circumstances than those who consume very small quantities of gas and are carried at a loss. Hence the burden is distributed where it belongs and every user of gas pays in accordance with the service that he receives and the gas that he consumes.

In every industry where merchandise is sold on a large scale it is always the one who buys the most merchandise in wholesale quantities who receives the best price, and this is also what the three-part rate does for the large consumer of gas.

The gas company benefits through being given a chance to expand in safety, for the demand charge in the three-part rate takes care of the interest charges of new equipment. The possibilities of obtaining industrial business are increased by such a rate, and the house heating field in all its vastness is also opened up to the gas company.

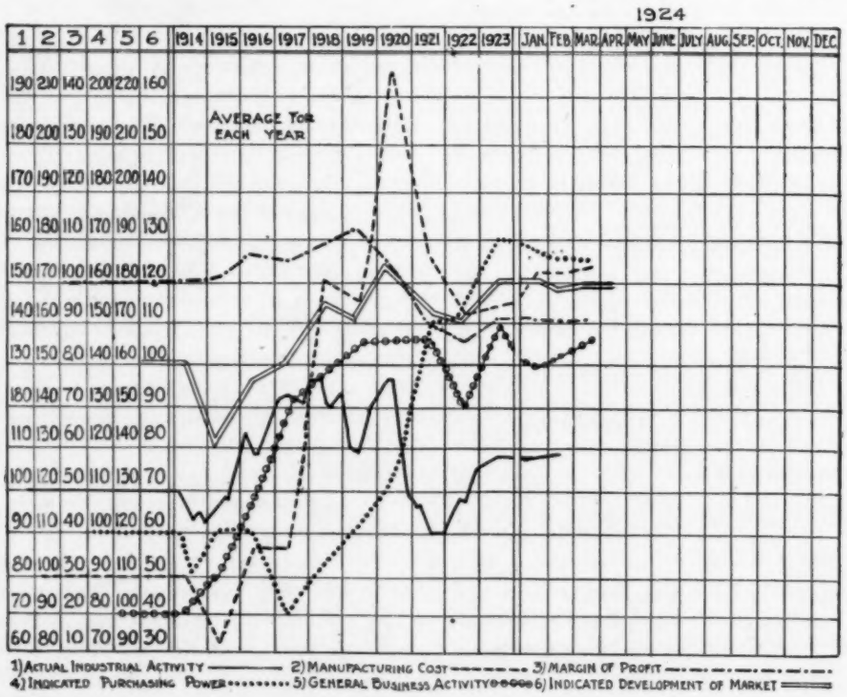
Taken all in all, it must be concluded that this bill is a real progressive step. It gives the gas company the privilege to apply the three-part rate or not, as it chooses. It cannot put any burden upon those gas companies who, for reasons of their own, cannot see their way clear towards the adoption of such a rate. It opens the field for great industrial progress. If it is adopted it will put New York State on the map as a real, live, progressive "gas community." It is an important step towards the attainment of our goal, "gas the universal fuel."

Business Conditions Are Normal

Market retains healthy aspect—Industry optimistic

L. W. Alwyn-Schmidt

MARKET conditions cannot be correctly judged by the performance of any separate industry, but only by a survey of all the factors making for prosperity or depression. If we fail to apply this rule, we are bound to meet disaster, as evidenced by the sudden financial depression in February. This was correctly indicated, however, by our chart, as may easily be seen by examining the sudden downward bend of the prosperity line during February. March in the meantime has brought the expected recovery, but reports from most market centers still characterize the situation as "streaky." This might have been expected, considering the general unsettled condition of the market around tax-paying time, accentuated still more this year by the expectancy of changes in the tax laws. With tax payments out of the way and considerable savings ahead of the taxpayer, recovery cannot be held back much longer. It is heralded by the double line of the chart showing the remarkable steadiness which has been its leading characteristic during the second half of 1923.



Danger of Decline Past

Market experts now agree that the danger of a decline is almost past. But their judgment also seems to be unanimous as regards the unlikelihood of any marked rise in the immediate future. This conservative opinion of the outlook is justified by actual conditions. The present situation possesses many contradictory elements. While indications in one direction (as, for instance, in the steel industry) point to a very considerable growth in the volume of business, there are other similar valuable indicators exerting a decisive downward pressure and preventing the economic curve from taking a clearly-defined upward movement.

In such a situation the manufacturer, desirous of getting some hint of the likely course of the market, does well to take consideration of the fundamentals of the market structure. These are as follows for his own specific field: the cost of raw materials, labor and overhead, making his own manufacturing cost, and the selling price of the manufactured product, with the resulting margin of profit. Let him imagine this inquiry repeated over the multitude of industrial enterprises of the United States and he will realize why cost of manufacturing and the manufacturer's profit margin are important factors in the well-being of the national markets. If manufacturing cost rises rapidly in the face of heavy competition amounting to over-production, and when in consequence prices decline, a decline in the profit margin of the national industry follows. This in turn means a weakening of the purchasing power of

(Continued on page 378)

Catechism of Central Station Gas Engineering in the United States

Installment No. 16

(Continued from last week)

(B) For pavement for sidewalks, applied as a finishing surface two to three inches thick upon a foundation of broken stone or coarse clinkers, the top dressed with finer ashes or coke breeze, boil the tar until at 60 deg. F. it has the consistency of vaseline. In the absence of special furnaces for the work, place a sheet of boiler plate upon stones, in the vicinity of the paving to be laid, so that it will be about one foot above the ground. On this plate throw building sand and underneath kindle a fire of wood or coke. Turn the sand over with a shovel until well heated. Gradually pour on the thick tar, meanwhile turning and mixing the mass until the sand is uniformly black and of such a consistency that a ball of it will just hold together while hot. While hot, and carrying the mixture in heated iron barrows or on shovels, apply where required, level with a hot rake and ram with a hot rammer. Then sprinkle the surface with fine sand and roll, using preferably a heavy hand roller. This may be made of a piece of cast iron street main, with ends plugged and center filled with sand.

Valve Design, etc., in Pump End of Steam Pump for Handling Tar

82. State the nature of the material to be employed and the points of valve design that should be observed in the pump end of a steam pump for handling tar.

Ans. All the parts of the pump end of a steam pump for handling tar should be made of iron, since the ammoniacal liquor, more or less of which is always mixed with the tar, would rapidly eat away any brass or composition which might be used for the cylinder lining or the valves.

The principal points of valve design to be observed are that the valves should afford full, free openings, and that the seats should be so arranged that no lumps of heavy tar or of solid matter in the tar will lodge on them and present the valves from closing tightly. A hinged valve is better than the ordinary form of pump valve, since in the latter form the center guide obstructs the opening to a great extent, while the hinged valve affords a free and unobstructed opening. These valves are sometimes used with horizontal seats and sometimes with seats inclined at an angle of 45 degrees. With the inclined seat there is less danger of any solid matter remaining on the seat and keeping the valve open.

A firm which handles a great deal of tar employs pumps in which the valves are hinged and the seats horizontal, and say that they have found them to give good satisfaction. In this case the valves are not provided with springs, being prevented from opening too far by stops and being closed by their own weight as soon as the pressure is removed from beneath them. In other pumps, springs are used with the same kind of valves to keep them from opening too far and to assist in closing them promptly when the plunger changes the direction of its travel. These springs should be made of iron or steel.

Methods for Determining Quantity of Ammonia in Ammoniacal Liquor

83. What are the different methods employed to determine the quantity of ammonia contained in ammoniacal liquor and consequently the value of the liquor, and which gives the most accurate results?

Ans. The most common and at the same time the least accurate method of determining the quantity of ammonia contained in any given sample of ammoniacal liquor, is to ascertain the specific gravity of the liquor by means of Twaddel's hydrometer, and then calculate the content of ammonia on the assumption that each degree Twaddel is equivalent to a strength of two ounces. This method is only approximately correct at best, and is far from accurate if the liquor contains any uncombined ammonia, since the greater the amount of such ammonia contained in the liquor the lower will be its specific gravity, and consequently the lower its value as indicated by the hydrometer.

Direct Titration Method

A second method, which is also more or less inaccurate, according to the composition of the liquor, is to add sulphuric acid to a measured quantity of the liquor until the ammonia is just neutralized, the strength of the acid and the quantity of liquor being so chosen that the results are the same as if pure acid and a gallon of liquor had been taken, and, the quantity of acid used being accurately measured, calculate the amount of ammonia neutralized from this quantity. The source of error in this method is found in the fact that the "fixed" ammonia salts dissolved in the liquor are not affected by the sulphuric acid, therefore no acid is used in neutralizing the ammonia containel in these salts, and this ammonia is not included in the amount credited to the liquor. In fact, according to Mr. H. L. Greville, in a series of tests made by him, an average of 22.5 per cent of the ammonia present in the liquors was not indicated by this method of testing.

The Wills or Distillation Test

The most accurate method of determining the true value of ammoniacal liquor is that which is known

as the Wills or distillation test. In this a measured quantity of the liquor is mixed with a caustic alkali, usually soda, and then exposed to a strong heat for one or two hours. The soda combines with the acids of the ammonia salts in the liquor, setting free all the ammonia contained in the liquor. This ammonia passes off in the gaseous state and is absorbed in a solution of sulphuric acid, the amount of acid neutralized being accurately determined. As in the saturation test the quantity of liquor and the strength of the acid used in the test are so chosen that the results can be read off in terms of ounces of ammonia per gallon of liquor. This test gives an exact determination of the amount of ammonia contained in a liquor, and is the one which should be employed in all cases in which it is necessary to determine the value of a liquor as between buyer and seller.

Five Degree Gas Liquor and Eight Ounce Gas Liquor

84. What is meant by the expressions "five degree gas liquor" and "eight ounce gas liquor."

Ans. The expression "five degree gas liquor" is used to denote an ammoniacal liquor, the specific gravity of which is such that a Twaddel hydrometer inserted in it will show a reading of five degrees. As there is a more or less close relation between the specific gravity of ammoniacal liquor and the amount of ammonia that it contains per unit of volume, this Twaddel test affords a rough indication of the strength of any given liquor.

Description of Hydrometer

The hydrometer consists of a bulb loaded with mercury or shot, and surmounted by a hollow cylinder above which is a graduated tube, all being made of glass. The bulb is so loaded as to cause the hydrometer to be almost completely submerged when floating in distilled water with a temperature of 60 degrees F. The point of the tube, which is even with the surface of the water, under these conditions, is marked as the 0 of the scale, which is then continued downwards on the tube in degrees and parts of degrees, each degree corresponding to an increase in the weight of the liquid of 5 ounces per cubic foot. The tube is usually made of such a length as to contain a scale reading to 25 degrees. When the hydrometer is placed in a liquid heavier than water, such as ammoniacal liquor, the volume of liquid required to be displaced in order to float the instrument is, of course, smaller than the volume of water required for this purpose, and the hydrometer will not be as deeply submerged as it is in the water. The point of the scale which is at the level of the surface of the liquid when the hydrometer is floating at rest, and not in contact with the sides of the containing vessel, is noted, and the liquid is said to be of a corresponding number of degrees Twaddel strength.

The strength of ammoniacal liquor is commercially expressed also by the number of ounces by weight of pure monohydrated sulphuric acid, H_2SO_4, of 1.84 specific gravity, which is required to saturate the ammonia contained in one gallon of the liquor. The expression "eight ounce gas liquor" thus denotes an ammoniacal liquor which contains per gallon a quantity of ammonia which requires eight ounces of pure monohydrated sulphuric acid of 1.84 specific gravity for its neutralization.

In determining the strength in aunces of any sample of ammoniacal liquor, accurate results cannot be obtained by adding the acid directly to the liquor. It is necessary to distil the liquor after adding to it a caustic alkali, such as caustic soda or milk of lime, and to use the acid to neutralize the ammonia as it is driven off by this distillation.

It is commonly considered that each degree Twaddel corresponds to a strength of two ounces, but this is only an approximation, and the strength of ammoniacal liquor should always be determined by the distillation test, which should be specified in all contracts for the sale of such liquor.

Calculating Pounds of Pure Ammonia Gas from Volumetric Figures

85. In the answer to question No. 55, the yield of ammoniacal liquor per net ton of coal is given as 27 gallons of from 6 ounces to 8 ounces strength. How many pounds of pure ammonia gas, NH_3, does this amount of liquor represent?

Ans. Since the term ounce as used in designating the strength of ammoniacal liquor means that a gallon of the liquor contains for each ounce strength, the quantity of pure ammonia that will neutralize one ounce of pure monohydrated sulphuric acid, H_2SO_4, with a specific gravity of 1.84, each gallon of 6 to 8 ounce liquor will contain an amount of ammonia that will neutralize 6 to 8 oz. of sulphuric acid.

The reaction between ammonia, NH_3, and sulphuric acid, H_2SO_4, takes place according to the following equation, $2NH_3 + H_2SO_4 = (NH_4)_2 SO_4$. The proportions by weight in which substances combine with each other can be determined from the molecular weights shown by the equation to enter into the reaction according to which the combination takes place. As the atomic weight of nitrogen, N, is 14, that of hydrogen, H, is 1, that of sulphur, S, is 32, and that of oxygen, O, is 16, the proportion by weight in which ammonia and sulphuric acid combine will be $2\ (14 + 3) = 34$ parts of ammonia and $(2 \times 1) + 32 + (16 \times 4) = 2 + 32 + 64 = 98$ parts of sulphuric acid. One ounce of the latter will therefore combine with $34/98 = 0.3469$ oz. of the former, and ammoniacal liquor will contain 0.3469 oz. of ammonia per gallon for each ounce of its strength. Or, in other words, the number of ounces of ammonia contained in a given number of gallons of ammoniacal liquor of a given strength is equal to the continued product of the number of gallons, the strength in ounces and 0.3469.

27 gallons of 6 ounce liquor will therefore contain $27 \times 6 \times 0.3469 = 162 \times 0.3469 = 56.19$ oz. or 3.51 lb. of ammonia, while 27 gallons of 8 ounce liquor will contain $27 \times 8 \times 0.3469 = 216 \times 0.3469 = 74.93$ oz. or 4.68 lb.

Apparatus for Concentrating Ammoniacal Liquor

86. Give a description, illustrated by sketches, of some form of apparatus for, and the process of concentrating ammoniacal liquor and state the conditions that render it advisable to so treat the liquor.

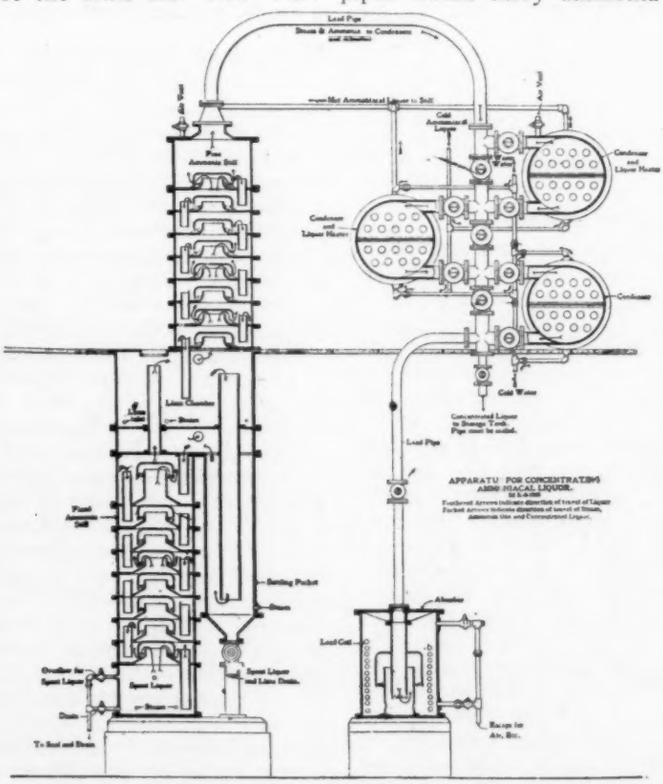
Ans. The apparatus used for concentrating ammoniacal liquor consists essentially of one or more "stills" in which the ammonia is driven out of the liquor either by heat alone or by the combined action of heat and a solution of lime, one or more "coolers," or condensers, in which the mixture of ammonia gas and water vapor passing off from the still is cooled and condensed into strong ammoniacal liquor, and one or more "absorbers," or catch vessels, in which any ammonia gas that escapes from the coolers is absorbed in cold water in a manner similar to that in which the ammonia is removed during the process of gas manufacture.

Details of the Apparatus

The apparatus illustrated in the cut is composed of two stills, three condensers so connected that either one, two or all three may be used at any time, and one absorber. In one of the stills the "free" ammonia (that is, the ammonia existing in the liquor either in an uncombined state or in the form of carbonates or sulphides, with occasionally a little cyanide or acetate), which can be driven off by heat alone, is expelled, the other still being used for driving off "fixed" ammonia or ammonia so combined (chiefly as chloride or thiosulphate with some thiocyanide and ferrocyanide, sulphate, sulphite and in very fresh liquor thiocarbonate) that some alkali must be used in order to enable the heat to set free the ammonia. The liquor connections are so arranged that the liquor on its way from the storage tank to the stills passes through the tubes of either one or two of the coolers and thus absorbs, and returns to the still, heat that would otherwise be imparted to the water used for cooling and lost.

In a more simple form of apparatus the two stills are combined into one, and the condensers replaced by a coil of lead pipe immersed in a vessel, through which water is kept flowing.

By referring to the cut it will be seen that the stills are composed of a number of separate chambers, each of which has a circular opening raised above its bottom and so covered with a hood, the edges of which are serrated, that any gas or vapor flowing through the opening can only pass out under the edge of the hood, which edge is kept sealed in liquor. The coolers are similar to the ordinary multitubular condensers used in gas manufacture, but the tubes should be made of some material that is not affected by ammonia and not of wrought iron or steel. The absorber is merely a washer in which the gas has to pass through the water twice. All connecting pipes which carry ammonia and steam, or strong liquor, should preferably be made of lead, and special stop cocks made of materials not affected by ammonia should be used.



How the Apparatus Is Operated

The apparatus is operated as follows:

A supply tank is kept filled with ammoniacal liquor

while the concentrator is kept running. The water space of the first cooler is filled with the weak liquor to be concentrated, or this space in both the first and second coolers may be so filled, while that in the other cooler is filled with cold water. The absorber is also filled with water. Steam is then turned on at the bottom of the fixed ammonia still, the air being blown out of the apparatus by the air vents on the free ammonia still, the first cooler and the absorber, and the apparatus is heated up. When the proper temperature has been reached, say about 175 degrees F. at the inlet to the first cooler, the liquor cocks are opened and liquor run from the supply tank through the cooler, or coolers, into the still. A current of water is also started through the coolers not being used as liquor heaters. The hot liquor running into the top of the still fills up the first compartment, overflows into the second, fills this up and overflows, and so on down through all the compartments of the free ammonia still into the lime chamber, through the lime settling pocket into and through the compartments of the fixed ammonia still, as indicated on the cut by the feathered arrows. The steam bubbling through the liquor, as it fills one compartment after the other, heats it more and more, until by the time the liquor has reached the lime chamber the free ammonia has all been driven off. Milk of lime added at this point decomposes the fixed ammonia compounds, and as the ammonia passes through the fixed ammonia still, it parts with the remaining ammonia under the action of the heat and reaches the bottom of the still spent and ready to be run through the sealed overflow to the drain.

The Absorption Process

The steam and the ammonia gas pass upward, as indicated by forked arrows on the cut, bubbling through the liquor in each compartment, which in each case absorbs a little of the ammonia to give it off again at the higher temperature met with in the compartment next below, until finally the steam and the remaining ammonia gas pass out together from the top of the still and enter the coolers. As the mixture cools the steam condenses, and in so doing absorbs the ammonia gas in greater and greater quantity as the temperature falls, until at the outlet of the last cooler most of the ammonia has been absorbed and the concentrated liquor so formed is drawn off to the storage tank. As it is not advisable to have the temperature at the outlet of the coolers reduced to too low a point, some of the ammonia gas is still unabsorbed at this point, but is caught by the water in the absorber, this water being kept cool by circulating cold water through the coil with which the absorber is provided. The liquor thus formed in the absorber should be drawn off and replaced by fresh water as soon as it reaches a strength of 2 deg. Twaddel.

Regulating the Product

The strength of the concentrated liquor is tested occasionally and kept at the proper point by adjusting the flow of liquor and of steam. The more steam used for the same amount of liquor the weaker is the concentrated liquor. The more weak liquor used for the same amount of steam the stronger is the concentrated liquor. If too much weak liquor, or too little steam is used, all the ammonia will not be driven off from the spent liquor, which will carry some of the ammonia out with it from the still. When this is the case the spent liquor running off will smell of ammonia.

Some hints as to the points to be watched in starting up, operating and letting down an ammonia concentrating apparatus will be found in a paper read before the Michigan Gas Association, at its Seventh Annual Meeting, by Mr. George Osius, and published in Progressive Age, Vol. XVIII, page 90, and the American Gas Light Journal, Vol. LXXII, page 449.

The principal condition rendering it advisable to concentrate ammoniacal liquor is remoteness from a market in which this liquor can be sold. In this case the reduction in cost of transportation owing to the concentration becomes an important item in permitting the ammonia to be sold at a price that renders it worth handling. It has been stated that a works carbonizing as low as 750 tons of coal per annum can net a profit from concentrated ammonia that will pay at least 15 per cent interest on the cost of the necessary apparatus. Of course, this figure depends somewhat on the location of the works and upon the amount of money put into the apparatus.

Methods of Manufacturing Sulphate of Ammonia

87. What is the common method of manufacturing sulphate of ammonia, and what are the chemical reactions that occur in the process?

Ans. The manufacture of sulphate of ammonia depends on the chemical facts that all compounds of ammonia are decomposed when heated with an alkali, free ammonia being liberated, and that sulphuric acid combines with ammonia to form sulphate of ammonia. The chemical changes involved may be represented as follows:

$$\underset{\text{Carbonate of ammonia}}{(NH_4)_2CO_3} + \underset{\text{Hydrate of lime}}{Ca(OH)_2} = \underset{\text{Carbonate of lime}}{CaCO_3} + \underset{\text{Water}}{2H_2O} + \underset{\text{Ammonia}}{2NH_3}$$

and

$$\underset{\text{Ammonia}}{2NH_3} + \underset{\text{Sulphuric acid}}{H_2SO_4} = \underset{\text{Sulphate of ammonia}}{(NH_4)_2SO_4}$$

In the operation as conducted by the intermittent system, the gas liquor is pumped into a still and heated by admitting live steam at the bottom of the still. On heating the mixture, free ammonia is disengaged, together with large volumes of sulphuretted hydrogen and other foul gases. When all, or nearly all, the free ammonia and that in the volatile compounds of ammonia have been driven from the liquor, cream of lime is added to free the ammonia from the fixed ammonia salts held in solution in the liquor. The acids of the salts combine with the lime, and the ammonia is liberated. The lime salts remain in the liquor. The ammonia and other gases leaving the still pass to a "saturator" containing sulphuric acid, through which they bubble. The ammonia is retained by the acid, forming sulphate of ammonia, which crystallizes and settles out from the solution and is ladled out and dried. The foul gases after leaving the saturator are either burned, or absorbed by oxide of iron, in order to prevent a nuisance.

(Seventeenth Installment Next Week)

THIS MATTER OF PUBLIC RELATIONS

(Continued from page 365)

friendship of any substantial number of the company's customers.

Advertising to sell an article must first of all have a good article to sell and then should create in the buyer's mind a desire to own the article. It is dealing with tangible things. The service of the utility being to sell product and appliances and good will, the first two can be well advertised, but when we come to the third, good will, it is an utterly intangible thing. Moreover, we are attempting to sell it to a customer who does not believe in it. You must remember that very much study has been given to this problem of advertising the good will of the utilities and no copy has ever been written that would seem to have accomplished it. This is true because of the very nature of the problem. In other words, we must first prepare the customers to believe in our sincerity. Until that is accomplished we can certainly expect little material return, but by all means it should be continued, doing the best we can.

Good Will Through Personal Contact

As for the efforts of the managers and department heads working through personal contact, we are safe in saying that it has always been successful where reasonably competent men are employed. Let me see if I can not make this point so strong that we can pass it proved. You men in your business must at times have brought to you controversies with customers. If you think back, you will realize that very few, if any, of those cases ever left your contact dissatisfied. This would be true even if the customer had been badly treated, because with your wide knowledge of your company's activities and with your personality and experience you could change your customer's point of view. Now, assuming you could do as much in your group contact via clubs, chambers of commerce and other civic organizations, which I do not think is necessarily true, just what percentage of your customers could you favorably affect in a reasonable lifetime? I am not going to answer that question because, of course, no one knows, but you will probably agree with me that if you reach and maintain a few hundred you will be accomplishing a good day's work. Now, this will not answer our purpose. If you do not agree with me on my guess, make it anything that your imagination will allow and you will never, in a utility of any size, reach more than a very small minority.

The Company Employees as Potential Good Will Builders

We agreed that the competent manager on contact with the customer can make him contented. Is there any reason in your mind why any employee in contact with the customer could not also make him contented? Is it not obvious that there are a vastly larger number of contacts made by employees than would ever be made by the manager? Is it not further obvious that the manager's efforts will be greatly strengthened by the very tie-in that must ensue? For example, the manager speaking at his Chamber of Commerce tells of the humanizing efforts of his company. The men who listen to him are the heads of businesses and of families. Coming from the other end, as from their employees and the members of their household, they find that this is really being done. The manager's statements are confirmed in a most convincing way.

First Effort Along These Lines

The first effort to put into real practice the principles outlined in that report was given publicity in a little pamphlet issued by the company, copies of which were sent to many of the large gas companies and to the gas and electric journals. Several large electric and combined electric and gas utilities investigated and several are earnestly trying to follow on.

If any of you remember that committee report you will recall it was suggested that it would be entirely possible for the large utility to reorganize so it would function insofar as its customers' relations were concerned exactly like the very tiny utility where the manager knew everybody by their first name. This was what has been given the name "Bill Jones Idea." That is the "Bill Jones Idea," neither more nor less, and the report pointed out that the premises were sound and it was only a question of design and execution, although obviously requiring tremendous reorganizing in order to accomplish the result.

How the "Bill Jones" Idea Was to Work

You will recall that it was proposed to divide the territory up into districts and have one high grade man with proper equipment in each district attending to all the wants of every possible description of his customers. It was proposed to similarly divide the office so that a customer could always go to the same employee for everything.

Reorganization of the office departments would have been revolutionary, but the same is true of the order executing department, although some of us had made some strides along that line with other ends in view and it was not so startling.

Careful study of the office end indicated that we could accomplish almost as much without going through the complete revolution suggested in the report, so this was done.

The Reorganization of the Office

The customer goes to one long and convenient counter called the "Customers' Department" for everything he requires except paying bills, and he may do that there if he cares to. Among other things which a customer may want when he comes to the office of a utility are: The securing of gas and electric service, the establishment of credit, duplicate bills, reporting of trouble, discussion of high bills, information and others. All these requirements are cared for by one group of employees in this Customers' Department. It is made flexible

by having the group in intimate contact with another department from which help can be drawn and returned as required. No customer is allowed to wait at any time for anything, and this is accomplished without any material loss in efficiency. The employees are selected largely for their personality. They are trained in their work and are given enough training in the other departments so that they can visualize almost any possible set of conditions.

The Use of the Telautograph

Orders requiring executing are transmitted by telautograph, which repeats in the executing department and in the credit department. This is being done while the order is being taken. Credit is checked only as poor and in such cases a code report comes back by telautograph to the employee waiting on the customer almost as soon as the pencil is lifted from the machine. The order is being made out in the executing department as soon as it appears on the telautograph so that before the customer leaves the customers' department his order is well on the way toward execution. No check of any kind is made against office records. The men in the executing department are so completely equipped that they are not particularly interested as to what the order is. All they are required to know is that the customer wants something. Practically all telephone orders by-pass the customers' department altogether, going directly to the executing department.

The "Flying Squadron"

From the headquarters of the order executing department these orders are sent out by telephone about every hour and a half. The men execute the orders that they get and anything else that the customer wants. Customers sign applications for gas and electric service and capital is made for the company out of it because the form is very simple and the customer is brought to understand that it is to secure his name and address with complete accuracy for the records and for his better service. It is not necessary for a customer to come to the office for anything if he does not care to. He may stop one of our "Flying Squadron" on the street and will receive exactly the same service. It does not make any difference if it is Sunday or holiday, or day or night, the same service is rendered.

The "Flying Squadron" consists of eighteen regulars and three alternates. Each works out from the central headquarters, but stays in his district. Each is looking after and making friends with about three thousand customers. They become known to their customers. Very frequently they are asked for by name. Each has his own car, all duplicates, with a most carefully and scientifically designed body and equipment. They do everything on the customers' premises that involves gas and electric service. On the sheets kept for them to automatically measure their efficiency and classify their time (they themselves are not troubled with this detail) appear over fifty headings. And they do all of them well.

The Selection of the Personnel

In the beginning the best material at hand was used for the personnel. Replacements are now very carefully chosen. They are selected first for personality. This probably sounds funny, but again I mean exactly what I say. They must be competent to learn the technical part of their business, but if they do not come up to the requirements of nice personality, appearance, address and education, among other things, they will not be tried. A number of them are college graduates and all must now be high school graduates. I think I can give you an idea of the selective work when I tell you that if you were picking out green material out of which to make very high grade salesmen, you would probably use exactly the qualifications that are used in selecting green material for the "Flying Squadron." They are a fine group of young Americans, on to their job and who look at you level-eyed. And, moreover, and this is most interesting and literally true, they are firmly convinced that they can some time make friends of all their customers.

The Reason for Revolutionary Organization Changes

A possible query is occurring to you that if we are so careful in selecting these employees, why all the necessity for the revolutionary changes in organization and equipment? It would not make any difference how perfect the employee might be if he were sent to make friends and do work with the scenery badly set. If he arrives three or four days after the customer had a right to expect him, or if the customer had a long array of employees coming one after the other to do something which, in his mind, could readily be done by one, would not those employees, no matter what their personality or their ability, have a fine chance to make friends!

In other words, this spectacular and really remarkable accomplishment of high speed transmission and execution is only one means to the end. It is not by any means the "Bill Jones Idea," it is only an essential part of it.

If any of you do not believe that nothing will give as good an entree to a customer as prompt and complete service, I would ask you only to think back over the complaints that you have had of your service in your company, or, if you do not remember, just put yourself in the customer's shoes.

The Cost of Putting Over the Bill Jones Idea

I am going to answer the question which I think will be asked. How much does this thing cost? Well, it does not make any difference if it costs a lot more than doing the work in the old way, but, as a matter of fact, it costs less. That is literally true, the operating costs are lower, but obsolete equipment must be scrapped and archaic office arrangements discarded.

But, again and again, do not lose sight of the fact that this very gratifying accomplishment of almost instantaneous order taking, transmission execution is not the fundamental idea. But unless you can ac-

complish the one, do not bother with the other. You are wasting your time.

Co-operation Is the Keynote

And now I come to one of the most important things which must be done if all of this which I have described is to be accomplished. Co-operation is the keynote. This must be intimate, earnest and unselfish. Sacred departmental perogatives must be thrown to the winds. Selfish departmental jealousies and standing on dignity must be eliminated, even if it is necessary to freely use the axe. You see, of course, what this means. The general management must be earnestly and thoughtfully working on the project. Each department head and his assistants must actually desire accomplishment in other departments equal to or better than their own. This is not impractical idealism, but it requires time and particularly thoughtful and constructive effort on the part of the chief executives.

Other Activities Being Studied

Only order taking, transmission and execution has been briefly described because it is only in these three activities that we feel we have made progress to the point that we can set it down and say that it works. Other activities are being studied and real progress made. For example, in our collection department, where it is all too easy to lose a friend, we are working along new and novel lines. Another innovation has been to establish the position of floor manager, filled by a fine type of man with wide acquaintance and knowledge of the business, whose job is to allow no customer to leave our office dissatisfied. Further, he feeds back to us examples to show where our carefully designed systems are not working to that perfection which we would like. In high bill adjustment work, another fruitful source of dissatisfaction, we have established the rudiments of some original methods. The telephone service has received much study. From all possible sources we are trying to direct information to those interested, so that we can come to know if our efforts to make friends are really accomplishing something. The information requires careful analysis. One instance never makes a case. An instance may look serious and complicated, but be valueless as a help to improve our system, while another may show the germ of a vital defect.

Employee Educational Work

In general employee educational work we are trying some novel ideas as well as following conventional lines. After examining all the proprietory methods of education that have been brought to our attention we are very sure that none fill our problem. This is a whole subject in itself, so that other than to say that we believe that some of the original thoughts along this important line that we have developed will probably yield gratifying results, I will not discuss it further.

You are quite justified in asking me the question—does it work? Is this effort to make friends with the customers really yielding concrete results? I could spend several hours telling you stories of actual happenings which, if you keep in mind that we are only about a year old in the work, would bring you, not I, to say that we have been successful. I do not say that. I would go so far as to say that a substantial number of customers have been changed from a position of antagonism or unfriendly neutrality to at least a frame of mind of genuine interest. Constant and earnest care is vitally necessary. It takes an awful long time to build good will, but a few false moves will destroy the crop of many months. The satisfied customer seldom says anything. There may be ways of finding out exactly what customers are thinking about us, and we mean to try and find them.

It is literally true that every new activity or change in activity of our company, even remotely affecting the customer, is examined critically from the standpoint of the man on the street before it is tried.

So, in conclusion, if you ask me if this new idea of securing good will of our customers "from the bottom up" really produces results, I can answer you fairly in the affirmative. To what extent I do not know. If there is anything better that we can do to gain the real friendship of our customers, we will try it at once.

To the enthusiastic co-operation of my assistants and the kindly and helpful advice of our president is due the success that has been achieved so far. In this I have been fortunate, indeed.

We are well aware that we have hitched our wagon to a star, but the wagon is progressing.

THE THREE-PART RATE IN NEW YORK

Seabury C. Mastick, Republican, from Westchester county, has introduced in the New York Senate a bill amending the Public Service Commission law and introducing the three-part rate structure in the State of New York. The bill follows in full:

"Section 1. Subdivision six of section sixty-five of chapter four hundred and eighty, of the laws of nineteen hundred and ten, entitled 'An act in relation to the public service commission and the transit commission, constituting chapter forty-eight of the consolidated laws,' such subdivision having been added by chapter eight hundred and ninety-eight of the laws of nineteen hundred and twenty-three, is hereby amended to read as follows:

"6. Service charges prohibited. Every gas corporation shall charge for gas supplied a fair and reasonable price. Every corporation supplying gas to the public shall base its charge for gas supplied to a consumer on a unit of one thousand feet per month; and for each proportionate part of such unit there shall be an equal charge; provided that nothing herein contained shall prevent such corporation from making a reasonable monthly minimum charge. No such corporation shall make or impose an additional charge or fee for service or for the installation of apparatus or the use of apparatus installed, except that with the consent of the public service commission any gas corporation may charge for its gas service on the basis of the three-part rate, containing, and limited to, a customer's charge, a demand charge and a commodity charge.

"2. This act shall take effect immediately."

BUSINESS CONDITIONS ARE NORMAL

(Continued from page 370)

the industry, resulting in a decline in the purchase of materials, the purchase price of labor and the manufacturer's spending power.

Industry in Good Condition

Expectation for larger orders has caused a revival of industrial activity and a greater demand for labor. This has brought about a small rise in wages and a similar limited rise in the cost of many leading raw materials. Both, however, are not large enough materially to weaken the margin of industrial profit. They have been accompanied by a co-related rise in the cost of the industrial product. So the industry is operating on a healthy basis, although profits are still below the averages of ten years ago, and certainly very much below the high tide of 1919.

If manufacturers are optimistic and inclined to increase their rate of production, they have in support of their theory the fact that the purchasing power of the nation remains very satisfactory. But it must be pointed out in this respect that the margin to be spent above his indispensable needs that is left the wage earner and salaried man is no longer as high as it was during the previous year. It has shown a steady decline since the beginning of the present year.

There has been a readjustment of the situation, disclosing a certain weakness of the market. This was quickly eliminated and is now followed by a new flattening-out movement upon a level just slightly below that of last year, with business marking time, waiting for a new cue.

A Forecast Into the Future

What is the likely outcome of this condition? An answer to this question cannot be found by applying past experience, because the history of American commerce does not seem to present any similar condition where the market has remained firmly established on the crest of an economic wave for almost three-quarters of a year. One might almost expect that the very length of the period must hide somewhere a sudden turn for the better or the worse. And, nevertheless, by taking into consideration all the factors pointed out, the stability of industrial production cost and earnings, the steadiness of national purchasing power and the healthy state of business in all branches, one is inclined to give this state of balance another three months, completing the cycle of a year.

This is the more likely as the present condition is absolutely healthy and shows no indication of underlying weakness. It is not caused by any inertia or lack of enterprise. On the contrary, manufacturers and jobbers all over the country report a regular flow of orders and the credit situation has improved very much during the first months of the year. Orders are numerous and in this way compensate for lack of quantity of the individual shipment. Merchants do not retrench, but they have adopted a system of quick turnover, eliminating in this manner the danger of overstocking which made the economic depression during the second half of 1914 so dangerous. There are manufacturers who are inclined to describe the market as "quiet." This description is wrong. It should rather be called "normal and befitting the size of the American market of today."

GREATER MEN THAN YOU

Frank Farrington

Greater men than you have made mistakes and got over them. Greater men than you have failed and have started over again and succeeded.

Count F. W. Woolworth's attempts to build up a successful business, attempts that failed. Then take a look at the highest building in the world, the Woolworth building, raised by the force of the dime and nickel purchases of the people after Woolworth finally struck pay dirt.

This does not mean that to succeed a man must first fail, or that any number of failures can be considered essential to ultimate success. You may not make any failures—though you probably will. But if you do fail at the first, second and third trials, "Try, try again." Naaman had to dip seven times in the muddy Jordan before there was any evidence of results.

Some men have risen to great heights with a record of nothing but one success after another through their careers. It would be very nice for you and me if it should work out like that for us. Unfortunately, such instances are exceptional. Most men achieve business success only after having failed in some of their attempts.

General Grant did not say he was going to "Fight it out on that line if it took all summer," and then go right on from one victory to another. He failed to break through here and he moved down the peninsula and tried at another point. He kept on moving and trying until outside of Petersburg he settled down for the siege that took all summer and all the next winter as well. But he succeeded in the end.

There have been many General Grants in business, and there have been many others who quit at the first failure. Greater men than you have failed many times before achieving success. Less men than you have won success because failures did not daunt them. "Up, boys, and at 'em!"

WARRANTY OF QUALITY

Warranty of quality, whether it is materials and supplies, or machinery or any other purchase, is a liability of the seller, and breach of that warranty is not waived if the buyer retains the property without objection after he discovers the breach. He affirms the sale, the Court of Appeals of Missouri, 255 S. W. Rep. 923, says, and is liable for the purchase price less the damage resulting from the deficiency in quality. This often becomes important when there is such a necessity for the use of the purchase that it is better to use it as it is than reject it and sustain the delay incident to replacement.

Current Market Prices

COALS (By Courtesy of Coal Age)

A. Bituminous.

(Spot prices, F. O. B., mines, net tons).

High Volatile, Eastern	Market	Price
Pool 54-64		
(Gas Standard))	New York	$1.40 to $1.65
Pittsburgh screened gas	Pittsburgh	2.30 to 2.50
Pittsburgh gas, mine run	Puttsburgh	2.25
Kanawha lump	Columbus	2.40 to 2.70
Kanawha mine run	Columbus	1.50 to 1.75
West Virginia lump	Cincinnati	2.25 to 2.50
W. Virginia gas mine run	Cincinnati	1.15 to 1.50
Midwest		
Indiana 4th vein lump	Chicago	2.75 to 3.00
Indiana 4th vein mine run	Chicago	2.25 to 2.50
South and Southwest		
Big Seam lump	Birmingham	2.50 to 2.75
Big Seam mine run	Birmingham	1.75 to 2.25
Southeast Kentucky lump	Louisville	2.50 to 2.75
Southeast Kentucky mine run	Louisville	1.25 to 2.00

B. Anthracite.

(Spot prices F. O. B. mines, gross tons),

Market	Freight rates	Independent	Company
Egg New York	$2.34	$8.25 to $8.65	$8.25 to $8.65
Egg Philadelphia	2.39	8.25 to 9.40	8.60 to 8.65
Egg Chicago (net tons)	5.06	7.59 to 7.81	7.65 to 7.72

COKE (By Courtesy of Iron Trade Review).

Connellsville, furnace	$3.60 to $4.00
Wise County, furnace	4.25 to 5.50
Alabama, furnace	5.00 to 6.00
Foundry, Newark, N. J., del.	10.41
Foundry, Chicago, ovens	12.50
Foundry, Boston, delivered	12.50
Foundry, St. Louis	12.50
Foundry, Granite City, Ill.	12.50
Foundry, Alabama	5.00 to 6.50

PETROLEUM (By Courtesy of Oil, Paint & Drug Reporter)

(Prices at wells, per bbl.)

Pennsylvania—Ohio—West Virginia.	
Cabell, West Virginia	$2.20
Corning, Ohio	2.15
Lima	2.28
Pennsylvania	4.00 to 4.50
Wooster, Ohio	2.15
Indiana—Illinois.	
Illinois	2.07
Indiana	2.08
Oklahoma—Kansas.	
Healdton	.90
Mid-continent (low gravity)	1.25
Gulf Coast.	
Gulf Coast, Grade A	$2.00
Gulf Coast, Grade B	1.70

GAS OILS.

Gas Oil, Bayonne, bulk gal.	5½c
Gas Oil (32-36) Illinois-Indiana,	5.38 to 5.63
Gas Oil (32-36) Oklahoma, gal.	3 to 3¼c
Gas Oil (32-36) Gulf Coast, gal.	4½ to 5 c

PIPE AND FITTINGS—CAST IRON GAS PIPE.

(By Courtesy Iron Trade Review.)

Four-inch, Chicago	$66.20 to $67.20
Six-inch and over, Chicago	62.20 to 63.20
Four-inch, Birmingham	57.00 to 58.00
Six-inch and over, Birmingham	53.00 to 54.00
Four-inch, New York	70.60 to 71.60
Six-inch and over, New York	65.60 to 66.60
Standard fittings, Birmingham, base	115.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20.

BY-PRODUCTS

(By Courtesy of Oil, Paint and Drug Reporter)

Ammonia aqua, 16 deg. drums lb.	5 to 5¼c
Ammonia aqua, 20 deg. drums lb.	6¼ to 6½c
Ammonia aqua, 26 deg. drums lb.	6¾ to 7 c
Ammonia squa, anhydrous cylinder, lb.	30 to 36 c
Ammonium sulphate, bulk F. O. B. Works, per 100 lbs.	$2.75 to $2.85
Potash prussiate, yellow casks, lb.	18 to 19 c
Potash prussiate, red casks, lb.	40 to 42 c
Soda prussiate, yellow casks, lb.	13 to 13½c
Soda sulphocyanide, barrels, lb.	45 to 55 c

COAL TAR BASIC PRODUCTS.

(By Courtesy of Oil, Paint and Drug Reporter)

Benzol C. P. tanks, works, gal.	25 to 30c
Benzol, drums, gal.	30 to 35c
Benzol, 90% tanks, works, gal.	23 to 28c
Benzol, 90% drums, gal.	28 to 33c
Napthalene, flake, barrels, lb.	5½ to 6½c
Napthalene, crushed bags, lb.	5½ to 6c
Solvent Naphtha, water white works, gal.	28c
Solvent Naphtha, drums, works, gal.	33c
Solvent Naptha, Crude Tanks, works, gal.	25c
Solvent Naphtha, drums, works, gal.	30c
Toluene, C. P. tanks, works, gal.	31c
Toluene C. P. drums, works, gal.	36c

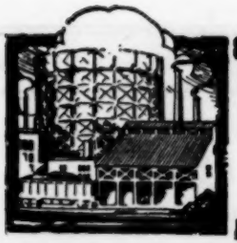
With the general falling off in domestic coal business and increasing shutdowns of mines in the Middle West, fine coals are on the up-grade, screenings showing a slow but steady firming up.

Conditions in the Ohio market are somewhat mixed, there being signs that the bottom has been reached in Cincinnati with the placing of railway contracts, though early lake business is lacking. Dullness and pessimism reign at Columbus and Cleveland. Production is very low in the Pittsburgh and central Pennsylvania districts. New England just plugs along at the recent low level. Atlantic seaboard markets show a tendency to steady somewhat, though a feeling of disquiet is evident at Philadelphia.

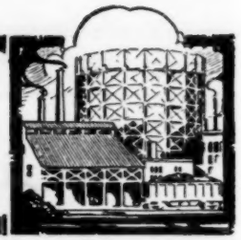
Production of bituminous coal took a pronounced drop during the week ended April 5, when output, according to the Geological Survey, amounted to 6,814,000 net tons, which was 2,004,000 tons less than was produced during the previous week. This is the lowest output on record for an eight-hour day week, except during the 1921 depression.

Gas oil is lower in the mid-west section in spite of increased demand for further refining. The Diesel grade is steady at previous figures.

Production of gas and fuel oil in February was 24,414,801 barrels, compared with 25,306,962 barrels in January, and 21,489,584 barrels in Feb., 1923. Stocks Feb. 29 were 36,916,734 barrels; Jan. 31, 36,365,396 barrels and February 28, 1923, 30,401,810 barrels. Exports in February were 2,690,350 barrels; in January, 2,616,857 barrels, and in February, 1923, 2,408,644 barrels. The indicated domestic consumption of gas and fuel oil in February was 21,173,113 barrels; in January, 22,396,964 barrels, and in February, 1923, 18,799,957 barrels.



NEWS OF THE GAS INDUSTRY



Columbia to Give Summer Course in Gas

Laboratory and lectures will constitute a summer course in the production and distribution of gas, to be given in Columbia University this summer.

The following lectures will be delivered:

Vertical Retorts—N. H. Memory, construction engineer, Isbell Porter Company; E. G. Blackwell, engineer, West Gas Improvement Co. of America.

Refractories in Gas Works—J. Spotts McDowell, Harbison-Walker Refractories Co.

Coke Ovens in Gas Manufacture—C. R. Bellamy, gas engineer, Semet-Solvay Company; C. J. Ramsburg, vice-president, The Koppers Company; F. D. Lohr, engineer, Seaboard By-product Coke Co.

Water Gas Set Construction—J. H. Taussig, gas engineer, The U. G. I. Contracting Co.

Cracking of Hydrocarbon Oils—W. M. Fulweiler, chemical engineer, The United Gas Improvement Co.

Ammonia Recovery—A. H. Zane, assistant superintendent, Astoria Light, Heat and Power Co.

The Function of the Laboratory—C. A. Lunn, chief chemist, Consolidated Gas Co. of New York; E. C. Uhlig, chief chemist, Brooklyn Union Gas Co.

Distribution at Normal Pressures—C. C. Simpson, Jr., general superintendent of mains, Consolidated Gas Co. of New York.

High Pressure Distribution—G. T. Macbeth, chief gas engineer, Westchester Lighting Co.

Utilization of Gas—N. T. Sellman, service engineer, American Gas Association.

The Industrial Heating Problem—Joseph A. Doyle, vice-president, W. S. Rockwell, Company.

The Principles of Evaluation—Alfred E. Forstall, consulting engineer, New York City.

Gas Rates—Wm. D. Ennis, vice-president, Technical Advisory Corporation.

Public Utilities Advertisers May Hold Sessions in London

Officers of the Public Utilities Advertising Association, a department of the National Advertising Commission, are considering the advisability of holding a department session at the London convention of the Associated Advertising Clubs.

"It all depends," says Frank L. Blanchard, chairman of the committee in charge of London program arrangements, "on the number of men who will be in London who are interested in public utility advertising.

"We should be glad to hear from men who would be interested in such a session. If we can be assured of a sufficiently large attendance to justify it, we will proceed immediately with plans for a program and arrangements for a meeting place. I should be glad to hear from any who are interested."

The Public Utilities Advertising Association is a comparatively new member of the National Advertising Commission, having been admitted in January of last year. It has a membership, however, of more than 300, and its members represent practically all of the major public utility interests of the country, including several hundred subsidiary companies.

New Merger of Gas and Light Plants

Valparaiso, Ind. — Negotiations for the purchase by the Samuel Insull interests of the Valparaiso Light Company, the LaGrange Light and Power Company, the Elkhart Gas and Fuel Company and the Plymouth Electric Light and Power Company, from the J. H. Brewer interests are under way, it became known in Indianapolis recently. The deal, which, according to reports, is practically completed, involves a total investment of more than $1,500,000 and forms an important link in a chain of public utility properties operated in Chicago and across northern Indiana by the Insull management and control.

Purchases Automatic Control

Cleveland, O.—The St. Paul Gas Light Company of St. Paul, Minn., has placed order with the Gas Machinery Company of Cleveland, O., for three automatic water gas controls to be installed in the water gas plant at St. Paul. The St. Paul Gas Light Company purchased an automatic control from the Gas Machinery Company last year, and with the three automatics now on order, their water gas plant will be fully equipped and this will enable the gas company to operate the four 11-foot water gas sets in an entirely uniform manner. The automatic controls will operate the sets on shorter blow and run periods, reducing wear and tear on the refractories, and increasing the efficiency of the apparatus due to more even heats with short cycles. The order also calls for the necessary hydraulic equipment and for safety explosion blast check valves.

Gas Rate Increased in Minneapolis

Minneapolis, Minn.—The price of gas in Minneapolis will go up 1 cent May 1, putting the rate at $1.01 a thousand cubic feet, as a result of a report filed with the city clerk by receivers for the Minneapolis Gas Light Company.

Because the cost of producing gas advanced .77 of a cent for the period ending February 29, the price for the four month period beginning May 1 will go up under the terms of the receivership.

The advance will put the price where it was before the drop of 1 cent four months ago. Advancing costs on all items, and smaller return on the residues were given as reasons for the increases. Total net holder cost for the period was given as $624,347.61. The previous period cost was $564,233.

There are 10,000 users of gas in Minneapolis. The company sold 1,230,261,482 cubic feet during the four month period on which the price increase is based.

Columbia Gas Earns $1,643,701 Net in February

Cincinnati, O.—Net earnings of the Columbia Gas and Electric

Company and its subsidiaries in February were $1,643,701.57, according to a statement issued recently by P. C. Gossler, president. The gross earnings of the corporation were $3,034,762.48 for the month, which includes those of the Columbia Gas and Fuel Company, Federal Gas and Fuel Company, Springfield Gas Company and the Dayton Gas Company, acquired by the corporation last December.

In a letter to the stockholders in regard to the February earnings, Mr. Gossler called attention to the fact that the acquisition of the four gas properties located in Dayton, Springfield and Columbus, O., have added over 130,000 gas customers. At the stockholders' meeting of the corporation, to be held at Charleston, W. Va., April 8, they will be asked to approve a plan for the financing of additional properties.

Gas Plant Increasing Capacity

Fond Du Lac, Wis.—An additional bench equipped with nine new retorts which will increase the capacity of the coal gas plant about 50 per cent is being installed by the Eastern Wisconsin Electric Company at a cost of approximately $73,000. The addition will be completed about June 1, officials of the company say.

At the present time the normal total capacity of the gas plant is about 600,000 cubic feet per day with a maximum of 680,000 cubic feet. With the addition of the new equipment the normal capacity will be raised to approximately 800,000 cubic feet with a maximum of 920,000 cubic feet.

The equipment is being installed and the material furnished by the United Gas Improvement Company of Philadelphia.

The addition of this equipment makes the Eastern Wisconsin gas plant up to the minute in equipment and capable of caring for the city's needs in any emergency.

Central Counties Gas Co. Reports Good Year

Visalia, Cal.—The Central Counties Gas Company, operating in Visalia, Porterville, Lindsay, Tulare, Exeter, reports to the Railroad Commission for the year 1923 that its operating revenue was $216,318.81; operating expenses $165,668.16, giving a net operating revenue of $50,650.65. Miscellaneous non-operating revenue amounted to $2,460. Interest, rent and other deductions totaled $42,058.68. The net corporate income for the year was $11,051.97. The surplus at the beginning of the year amounted to $2,966.53. Miscellaneous deductions were $1,141.80. The company declared dividends of $10,352.38 during the year, leaving an accumulated surplus at the end of the year of $2,524.42.

Wisconsin Utilities Association Meets in Milwaukee

Milwaukee, Wis.—The Wisconsin Utilities Association met in Milwaukee, Wis., on Thursday and Friday, April 17 and 18, 1924, in annual convention. The meeting was well attended and the section spent a busy two days listening to various addresses and reports. The annual banquet took place in the Hotel Pfister on the evening of April 18.

New Officers of Eastern States Conference for 1924

The following were elected to serve for the year 1924-5: President, F. H. Young, Newark, N. J.; vice-presidents, W. H. Gribbel, Philadelphia, and W. R. Rhodes, Grier Hirsch, York, Pa.; secretary and treasurer, R. H. Koehler, Newark, N. J. The executive committee for the fall term is composed of J. P. Hamlin, Newark; Jacob B. Jones, Bridgeton, N. J.; and Mr. Atwood of Wilmington, Del. For unexpired term, L. R. Dutton of Jenkinstown, Pa.

Gas Schedule Approved by Public Service Commission

Watertown, N. Y.—Northern New York Utilities, Inc. Gas service supplied in city of Watertown, N. Y. Schedules filed to become effective May 1, 1924, reissues without change present rates for gas consumed. New regulations provide a period of ten days within which bills shall be paid. Forty-eight hours' notice to be given by customer to discontinue service; in case meter is removed for non-payment of bill, a charge of $1 will be made for re-setting meter within three months from date of removal. It is also provided that no additional customers will be taken under classification for prepayment meter service.

Yankton, S. D.

The Yankton Light & Heating Company has just been granted a franchise, which was voted the company with but very little opposition, the vote being three to one in favor. New machinery, more storage and a station meter are being contemplated at the plant.

Troy Coke Plant to Make Gas for Capitol District

Albany, N. Y.—Establishment of a tri-city gas supply center for Albany, Troy and Schenectady, is a part of the plans of the $3,000,000 Troy Coke & Iron plant in South Troy, according to semi-official announcement.

Consent of the Troy Common Council for the laying of a gas main beneath the Hudson River to Breaker Island, owned by the Brady interests and controlled by the Municipal Gas Company, is the first step in a far-reaching plan, details of which are now in negotiation. Federal consent to the use of the river bed will be obtained later.

Gas as a by-product of the coke ovens of the new Troy corporation is to be piped into the Albany and Troy mains and eventually to Schenectady, increasing the available supply and reducing gas manufacturing costs.

Scope of the new Troy company's coke ovens will in a measure depend on the size of contracts for illuminating gas now under negotiation with the gas companies of the three cities, it was learned. Officers of the new company were in conference at New York with William G. Roche, Troy attorney, one of the leading proponents of the Deeper Hudson, who represents the new coke company.

The Albany Municipal Gas Company, handling about 40 per cent of the gas in the Capitol district, will be one of the biggest consumers from the new corporation, it is said. Last year the company sold 1,200,000,000 cubic feet of gas.

Gas Co. Not Obliged to Pay for Low Pressure

Louisville, Ky.—Advices received by Louisville attorneys recently from Frankfort stated that the Court of Appeals had reversed the finding of the Circuit Court in the Sherman case. It stated that in an opinion, handed down by Judge Gus Thomas, he held that the franchise contract did not require the company to insure consumers a supply of 12,000,000 cubic feet of gas per day or the amount of pressure required to supply this amount and that the contract only required that the company "exercise ordinary care to produce that much."

That this decision was an important one and will establish a precedent which will be followed in the disposition of other cases, pending against the company, was intimated and indicated in a statement made by Judge Matt O'Doherty, counsel for the Louisville Gas and Electric Company.

New Service Station for Louisville Gas Company

Louisville, Ky. — Ground has been broken for the new service station to be erected by the Louisville Gas and Electric Company this year at a cost of more than a half million dollars. A permit for the excavation was secured from the city building inspector and the actual work of construction started before April 1.

The building will measure 350 by 350 feet, with basement and eight stories. The unit to be erected this year will be 175 by 175 feet, with basement and three stories. The building will be of steel and concrete construction and will be fireproof throughout.

New Haven Gas Co. to Sell Stock to Customers

New Haven, Conn.—The New Haven Gas Light Company is to give its customers the opportunity to virtually own the company itself, according to an announcement just made. This is to be accomplished by the offering of a good block of the company's stock to those of its customers who do not, at the present time, own any.

The New Haven Gas Light Company, it is believed, is the first concern of its nature in this locality to promote a campaign for customer-ownership, and as such is a pioneer in this field. Sixty thousand circulars bearing the announcement of the opportunity to buy the stock are now in the process of being mailed, and it is expected that there will be an overwhelming response.

Under the new plan, customers of the company may purchase for themselves or members of their immediate families not more than twenty shares provided that on the date of the receipt of application the customer does not already own stock in the company.

The stock is offered at $32 per share of $25 par value, payable either in cash with application or by installments, $7 per share on or before May 1, and $5 per share monthly, completing the payments on October 1. Interest at the rate of 6 per cent will be allowed on all partial payments. Certificates will be delivered as soon as possible after final payment is made. Customers paying for the stock on the installment plan may, according to the announcement of the company, pay the balance due at any time, and in such cases adjustment of interest and dividends will be made.

The statement of the gas company, accompanying the announcement of the opportunity to buy the stock is as follows:

"It is to the interest of customers, stockholders and the general public that the capital stock of this company be distributed as widely as possible in the territory served, but particularly amongst gas customers and employees of the company.

"Employees have had opportunity from time to time and by various plans to acquire stock in the company, with the result that, excluding officers, 256 of the employees are owners of 5,177 shares of the capital stock, with a present market value of about $168,000.

"The investment should be attractive to citizens of New Haven in many ways. The New Haven Gas Light Company was incorporated in 1847 and has paid dividends continuously beginning in 1850. The rate has been 8 per cent per annum since 1903. The stock is exempt from local taxation and the dividends are exempt from the normal Federal income tax. If purchased on the terms of this offer, the rate of interest returned is 6¼ per cent per year on actual cost.

"Gas has become more and more a necessity in modern life and its use is increasing. The nature of the business, therefore, is solid and enduring. The business is regulated by law administered by the Public Utilities Commission, so that it is only possible to earn a reasonable return on the investment. On the other hand, the business is protected by law, as well as regulated, so that it has the right to a reasonable return, and this practically insures to the investor a steady income. In proportion to its size, the New Haven Gas Light Co. is financially one of the strongest in the country. Sworn reports showing its operations and financial condition are filed annually with the Public Utilities Commission and are open to public inspection. The company publishes its annual report each year and the press places the full details before the public.

"Another fact that should appeal to the local investor is that he knows the size of the gas works and the extent of the distribution system, and that they are up to date. He knows the character and reputation of the management and the quality of the service rendered.

"The company is largely locally owned and controlled. About 70 per cent of its outstanding capital stock is owned within the district supplied with gas. The stockholder has friends or acquaintances among the management and operating staff of the company. Ownership largely by the gas consumers is almost a guarantee of friendly public relations—this last having important bearing on the future value of the investment."

Laclede Gas Co. Sold to Harriman & Company

W. A. Harriman & Co. of New York have purchased a controlling interest in the Laclede Gas Light Company and have options on additional stock until May 5 at 98½, it was reported recently. The company is capitalized at about $40,000,000. It owns and operates all the gas systems of St. Louis, and also operates an electric lighting system.

Members of the Harriman firm would neither confirm nor deny the report of the transaction.